

DH-100

DH-110

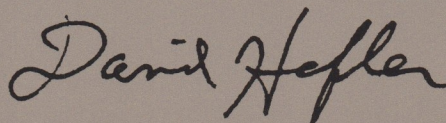
DH-330

DH-120

XL-280

DH-500

- In the audio industry, Hafler™ products have always stood apart. This may be a result of our constant search for audio perfection. We admit to be perfectionists when it comes to sound, for us, sound reigns supreme. You can hear the difference in the sonic quality of our components; you can even hear it in the words reviewers use to describe them.
- Words like “elaborate,” “complex” and “flashy” have never fit our components. Instead, the words “elegance,” “simplicity” and “reliability” seem to belong to Hafler products alone.
- The distinction is rooted in our basic philosophy. From Day One we were committed to the theory that less is more—that the ideal circuitry should achieve maximum effect at minimal cost.
- Consequently, our systems became models of efficiency. We used only proven, superior components, we employed only the most streamlined designs. Any “frill” that might decrease reliability or increase cost was rejected. Our ultimate goal was always pure, unimpeded sound.
- Our results were consistent. Hafler products all share the same characteristics: elegant sonic quality, simplicity in design, modesty in price and reliability.
- In over 30 years, little has changed. One-by-one, we still build Hafler designed components with the same, basic philosophy at their very core. And, one-by-one, critical listeners meet them with the same conclusion: less is more.
- I invite you to turn a critical eye to the pages that follow. Then turn a critical ear to the components they describe. I know you'll hear the distinction immediately—a distinction we've built from years of uncompromised quality. A distinction which proves that, here at Hafler, sound still reigns supreme.

A handwritten signature in black ink that reads "David Hafler". The signature is written in a cursive, flowing style with a large, prominent 'D' and 'H'.

DH-100

P R E A M P L I F I E R

● The DH-100 epitomizes the very heart of the Hafler™ product line philosophy: to offer maximum value at a minimal cost. Consequently, you won't find many frills in the DH-100. What you *will* find is sheer, refined performance.

● In sound, the DH-100 achieves superiority because no comparably priced preamp uses expensive polypropylene and polycarbonate capacitors exclusively in the signal path. Providing the 4 essential controls, tape monitoring, and inputs for magnetic phono and three high level sources, Hafler engineering shows that cost-effective integrated circuits can provide the same quality sound as discrete transistors.

● The DH-100 is loaded with engineering refinements. A delay circuit mutes turn-on 'pops' and surges, saving your speakers and your ears. Precise RIAA phono equalization and a balanced tone control circuit assure accurate response. Exceptional high frequency

separation preserves interchannel phase consistency for a sharply delineated stereo image. Unused inputs are isolated to prevent feedthrough distortion. The power supply is truly low impedance—over the full audio band. And the preamp output can drive high impedance headphones as well as an amplifier.

● In any Hafler product, conventional harmonic and intermodulation distortion is virtually unmeasurable. But we also strive to minimize other less obvious distortions. Example: Intermodulation above the audio band can produce audible distortion products. Solution: The DH-100 handles very high frequencies cleanly, rather than rolling them off, and thus eliminates the transient and IM distortions.



**"The DH-100 can go head-to-head
with higher priced preamps and come out well...
"If performance is what you look for in a preamp,
you'll find much to love in the DH-100."**

HIGH FIDELITY



DH-330



DH-110



M3 M4 M5
Auto Stop

Save Scan

Tuning

MuteOff AutoFilter
MuteSens AutoStereo

Volume

Power
Phones
hafler

Bass

Treble

Balance

Volume

Power
Phones
hafler

DH-110

P R E A M P L I F I E R

"The Hafler DH-110 ranks with the best preamplifiers on the market today...Although one could pay considerably more for a preamplifier... it would be very difficult to find one that is better in any meaningful way."

- The DH-110's low noise and distortion are legendary. This versatile control center is the standard bearer of the Hafler line. The DH-110 challenges comparison at any price, on any criteria.
- The improvements the DH-110 lends to your system are obvious the moment you start to listen. A three-dimensional image takes shape...acoustics are more accurate...voices are more precise...transients are more articulate. With the DH-110, reproduced sound becomes *real*.
- Facilities include two magnetic phono inputs; two complete tape circuits with monitoring facilities and LED indication of monitoring mode; a separate input-output loop for an equalizer or other signal processor; a switchable highpass filter; easy conversion to rack mounting (adapters are supplied); a front panel jack for most high impedance headphones, or for tape recording; and two pairs of audio outputs—one of which is switched by the headphone jack for private listening. The DH-112, a high gain pre-amplifier for moving coil cartridges, is an optional internal accessory.
- The full complementary symmetry circuit employs all discrete silicon transistors—no ICs. Precision components hold very tight tolerances on inter-channel balance and RIAA equalization. This assures accurate phase relationships for correct spatial perspectives. An integral muting circuit eliminates turn-on and turn-off annoyances. The precision volume control maintains accurate balance between channels. The tone controls are effective while audibly unobtrusive, but may be totally bypassed.
- Less obvious significant refinements include a full power bandwidth that extends to 200 kHz, easily accommodating problem signals; a low impedance power supply; the use of low distortion, low dielectric loss capacitors; silver plated contacts on the selector switches for long term noise-free operation; internal grounding of unused inputs for lower crosstalk; internal sockets for phono loading capacitors to accommodate specific cartridges; and a very wide phono acceptance level to handle the full dynamic range of the best cartridges.



DH-330

F M T U N E R



- The DH-330 tuner is the perfect complement to Hafler preamplifiers in technology, sound quality and facilities, as well as appearance. FM tuning was never easier, surer, or more listenable. On a live broadcast the realism is breathtaking. Your favorite station is there—perfectly—when you just switch it on.

- If reception is difficult, this tuner stands out. More stations, both weak and strong, simply sound better. The DH-330 is the tuner for the exceptional—in program content, in broadcast quality, and in listener perception.

- The Hafler FM experience is sheer pleasure. You get the lowest distortion and noise; fast, accurate tuning with ideal interstation muting; and a dynamic suppressor for multipath interference. A 75 Ohm coaxial connector facilitates a shielded antenna connection, as well as 300 Ohm lead-in. A volume control and a front panel output make taping and headphone use simple and convenient.

- Selectable muting enables you to "DX" every signal, or just scan those with acceptable signal strength for quality reception. The five-station memory provides instant access to your favorites, while Auto-Search (a five-second pause mode) and bidirectional seeking make it easy to find all the others.

- A Hafler-designed microprocessor highlights the sophisticated technology which makes tuning simple and positive. Quartz-controlled digitally synthesized tuning—not just a digital readout—provides precision lowest distortion reception. The non-volatile memory needs no batteries. Even if the tuner is unplugged, the last station you listened to will reappear precisely tuned, and all five preset stations are retained.

- Multipath interference can distort even a powerful signal. This is a pervasive problem in cities, and often in the hills. The DH-330 has an exclusive multipath and noise sensing AutoFilter circuit which greatly improves listening quality by dynamically varying the tuner's

response and high frequency separation.

On a clear signal it is deactivated.

- Once on station, the tuner's selectivity—or ability to reject extraneous interference—is paramount. Five tuned circuits in the "front end," including a triple-tuned RF stage, make the DH-330 exceptional. The superior isolation of three dual-gate MOSFETs provides exceptional rejection of spurious artifacts, and reduces any possibility of generating IM distortion in the presence of high level signals. The incoming signal does not affect the oscillator, and the added selectivity keeps the mixer stage from being overloaded by off-channel signals. Four ceramic filters in the IF stages have a flat group-delay characteristic, improving selectivity and phase linearity and lowering distortion.

"(In) tuning and reception performance...the Hafler is superb in all respects...The Hafler DH-330 is a high quality, easy-to-use, full-function, good sounding FM tuner at a moderate price."

DH-120

A M P L I F I E R

- The DH-120 may shatter the illusions of some audiophiles in their search for perfection with ever larger, heavier and more expensive designs. It demonstrates once again that quality, not quantity, makes the best sound. With careful engineering for adequate power headroom and excellent overload characteristics, together with conservative ratings, the DH-120 surpasses in sound quality many amplifiers of substantially higher advertised output.
- To the technically knowledgeable observer, the DH-120 is quite elegant. Its novel drive circuit is extraordinarily linear; its very low distortion is achieved with relatively little negative feedback. The oversized heat sinks and power supply, the careful selection of critical components for their sonic attributes, and the evident product quality demonstrates our commitment to excellence.
- The most important design element is the utilization of power MOSFET output devices. The advantages of MOSFETs include self-stabilization, robustness, linearity, high speed, vacuum tube-like characteristics and they require no thermal compensation. Because they can handle heavy currents, current limiting circuits are not required. The



"In view of the manner in which the DH-120 withstood the punishment of our test program, it should enjoy a long and trouble-free life in ordinary home music system service...One thing is certain: the DH-120 can play the loudest of any '60 watt' amplifier we have heard!"

STEREO REVIEW



- The audio enthusiast will appreciate the extra features which make the DH-120 more versatile than conventional amplifiers. Independent level controls on each channel are valuable for such applications as bi-amplification. For those needing higher power in a small package, a back panel switch converts operation to a bridged mono mode, which uses both channels to deliver in excess of 125 watts. If separate speakers are to be used in another area, a second set of speaker terminals is provided. Alternatively, these terminals can be switched to power rear speakers to add ambiance recovery to the main system.
- Hafler ingenuity has developed a uniquely simple and effective means of recovering heretofore inaccessible sonic information which has been hidden in many recordings and broadcasts. These signals consist of reflected and reverberant sounds which contribute the sense of space and depth in the recording location. When these sounds are reintroduced through loudspeakers placed behind the listener, using the Hafler Ambiance Recovery System, you will find a new sense of immediacy and involvement emerging from many of your familiar recordings.

XL-280

A M P L I F I E R



- The new *EXCELINEAR* Amplifier circuitry marks one of those rare true advances in amplifier design. The XL-280 is the first amplifier which demonstrates true linearity in phase, amplitude and transfer characteristic. It is clearly superior to amplifiers of far higher price on the definitive straight wire differential test—the SWDT. This test—detailed in

other literature we will send you on request—is a comparison of an amplifier's output with its input, comprehensively revealing all forms of audible distortion. The XL-280 has *no* audible distortion on this critical test.

- The XL-280 even includes a perfectionist's 'tweaking' adjustment for each channel which enables you to match your amplifier to *your* speakers, improving on standard factory settings.



"The 280 reproduces both depth and spaciousness very well—better, in fact, than many of the higher-priced amplifiers..."
"The XL-280 is more than a paradigm of contemporary amplifier design: It is a paragon of audio virtues."

STEREOPHILE, HIGH FIDELITY

● The circuit is an evolutionary departure from previous Hafler amplifiers. Gold input jacks feed 4 J-FETs in a double differential push-pull cascoded input stage. It is notable for thermal stability with 'tube-like' advantages: low distortion, low noise, high impedance. The second stage current-mirrors the input for greater linearity. The circuit is direct coupled throughout; the usual input

capacitor and output choke have been designed out; power supply capacitors have been bypassed; 30 dB less overall feedback drops TIM distortion. There are separate power supplies for the driver stages and each output channel. Total capacitance is up 56% to 31,200 mfd for improved low end performance. Additional output MOSFETs double the

low impedance drive capability: the results from some hard-to-drive speakers will be a revelation. A switch provides optional bridged mono operation for 400 watts into 8 ohms if extraordinary power is needed. Typical Hafler conservatism even includes back panel speaker protection fuses. Rack mounting is an available option.



hafler 500

"Our experience with testing the Hafler DH-500 confirmed that it is truly a 'bulletproof' amplifier hardly likely to be damaged by anything that might be applied to its input or connected across its output. It withstood the most brutal treatment we could apply without damage, and it was perhaps the coolest amplifier we have had the pleasure of using." "Hafler...seems to be following in its own footsteps, so to speak, with yet another truly state-of-the-art product that...offers exceptional value for the money."

- With most popular speaker systems, the power needed to accurately reproduce today's uncompressed musical peaks is significantly higher than ever before—often requiring more than 10 dB of additional power!
- The Hafler DH-500 is designed to deliver power with precision and unexcelled musicality. The signal travels through an all-complementary, completely symmetrical configuration with heavy-duty power MOSFET outputs. This proven discrete-component design has all the sonic virtues of Class-A performance without the inefficiency and thermal problems associated with such circuitry.
- Aside from achieving clean power, choosing the DH-500 offers other benefits as well. The Hafler DH-500 Power Amplifier was consciously designed to eliminate the loading problems that trouble most amplifiers. Conservatively rated at 255 watts per channel with less than 0.025 percent distortion of *any kind* over the frequency range from 20 Hz to 20 kHz, the DH-500's rugged

construction and high reliability make it the component of choice for demanding requirements. Its realistic price and superior sonic performance make it particularly suited for audio-perfectionist loudspeakers that can accept and benefit from its very high power levels.

- An amplifier's ability to deliver power into low impedances is often *the* significant factor that distinguishes its sonic performance with a given loudspeaker system—sometimes even outweighing differences in rated power.
- Aside from its enormous current reserves, the DH-500 has a very low dynamic output impedance. This restrains spurious speaker cone activity and prevents back-EMF voltage (generated by woofer voice-coil movement) from entering the amplifier's feedback loop and creating dynamic-interface distortions.

- In another area, the extended high-frequency power bandwidth of the DH-500 is designed to prevent ultrasonic intermodulation effects *within* the audible range. In the DH-500, these effects are reduced to inaudibility and near unmeasurability.
- The DH-500's entire chassis is cooled by a thermally-responsive multi-speed fan for cool, quiet operation.
- And in addition to back-panel fuses for speaker protection, a relay protects the speakers from excessive DC and provides a three-second turn-on delay to prevent problems from possible turn-on transients of associated equipment.
- For applications demanding very high power, the DH-500 can be easily converted to a super-power single-channel amplifier by the internal addition of the DH-502 input-bridging board. It then has a single floating-ground output in excess of 800 watts into 8 ohms.

KIT ASSEMBLIES

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- True to our word, you'll find Hafler products offer the best of both worlds: superior products and affordable prices.
- But for those of you who wish to save even more money—or simply enjoy the challenge of self-assembly—all Hafler products are available in easy to complete kits.
- Instructions offer detailed pictorial and descriptive steps. Almost all parts are prefabricated on complete circuit assemblies, and fully tested so that the performance of your self-assembled product is identical to one that is factory built.
- The kits are so thorough, and assembly so simple, even the novice will be able to complete assembly in one evening. And to eliminate all uncertainty and frustration, Hafler technicians stand ready to freely dispense phone advice.

SPECIFICATIONS

DH-100 PREAMPLIFIER

PHONO PREAMPLIFIER SECTION

Rated Output: 3 Vrms
Maximum Output: 8 Vrms at Record Out
Total Harmonic Distortion: less than 0.005%
RIAA Frequency Response: ± 0.25 dB, 20 Hz to 20 kHz
Sensitivity for ½ volt @ Record Out: 10 mV
Maximum Input Signal @ 1 kHz: 180 mV
Gain: 34 dB @ 1 kHz
Input Impedance: 475 K ohms in parallel with 130 pF
Signal to Noise Ratio: 82 dB below 0.5 volt output, (A)

LINE AMPLIFIER SECTION

Rated Output: 3 Vrms
Maximum Output: 8 Vrms
Total Harmonic Distortion: less than 0.005%
Frequency Response: ± 0.25 dB, 20 Hz to 20 kHz
Gain: 20 dB
Input Impedance: greater than 35 K ohms
Signal to Noise Ratio: 100 dB, (A)
Crosstalk: 80 dB down
Separation: greater than 62 dB @ 1 kHz; 45 dB @ 10 kHz
Bass Control: ± 12 dB @ 20 Hz, moving inflection
Treble Control: ± 15 dB @ 20 kHz, shelving

GENERAL SPECIFICATIONS

Semiconductors: 6 ICs, 5 diodes, 1 LED
Inputs: Phono, Tuner, Tape, Auxiliary
Outputs: Tape Record Out, Line
AC Power: 95-130 or 190-260 V, 50/60 Hz, 5 watts
AC Convenience Outlets: 2 switched
Size: 13½" wide x 3" high x 8¾" deep + 1" knobs
Net Weight: 7 lbs.

DH-110 PREAMPLIFIER

PHONO PREAMPLIFIER SECTION

Rated Output: 3 Vrms, 8 Hz to 105 kHz
Maximum Output: 12 Vrms at Record Out
Total Harmonic Distortion: less than 0.0006% @ 3 Vrms
RIAA Frequency Response: +0, -0.25 dB, 20 Hz to 20 kHz
RIAA Equalization Accuracy: +0, -0.1 dB, 30 Hz to 15 kHz
Sensitivity for ½ volt @ Record Out: 10 mV
Maximum Input Signal @ 1 kHz: 300 mV; (3 V @ 20 kHz)
Gain: 34 dB @ 1 kHz
Input Impedance: 47 k ohms in parallel with 30 pF. User Adjustable. Plug-in capacitors are installed to increase this to 150 pF/Phono 1; 250 pF/Phono 2
Signal to Noise Ratio: 87 dB below 0.5 volt output, (A)
Slew Rate: 12 volts per microsecond

LINE AMPLIFIER SECTION

Rated Output: 3 Vrms, 4 Hz to 210 kHz
Maximum Output: 14 Vrms, 20 Hz to 20 kHz
Total Harmonic Distortion: Less than 0.001%
Frequency Response: +0, -0.1 dB, 20 Hz to 20 kHz
Sensitivity: 50 millivolts
Maximum Input Signal @ 1 kHz: 14 Vrms; volume control set at -20 dB
Gain: 20 dB
Input Impedance: greater than 25k ohms
Signal to Noise Ratio: 105 dB, (A)
Slew Rate: 12 volts per microsecond
Crosstalk: 72 dB down
Separation: greater than 82 dB @ 1 kHz; 52 dB @ 20 kHz
Bass Control: ± 17 dB @ 20 Hz, variable turnover
Treble Control: ± 17 dB @ 20 kHz, shelving @ 5 kHz
Filter Cutoff: 25 Hz; -12 dB/octave

GENERAL SPECIFICATIONS

Semiconductors: 30 transistors, 3 ICs, 12 diodes, 2 LEDs
Inputs: 2 Phono, Tuner, Auxiliary, 2 Tape, EPL
Outputs: 2 Tape (buffered), 2 Line, EPL, Headphone jack
IM Distortion: below residual of instrumentation
AC Power: 100-130 and 200-260 V, 50/60 Hz, 3.5 watts
AC Convenience Outlets: 3 switched, 1 unswitched
Size: 17" wide x 3" high x 8½" deep + 1" knobs, 19" rack mounting accessories included.
Net Weight: 10 lbs.

DH-330 FM TUNER

Useable Sensitivity: 11.3 dBf (2 μ V)
50 dB Quietening Sensitivity:
Mono: 15.3 dBf (3.2 μ V)
Stereo: 36.5 dBf (37 μ V)
Total Harmonic Distortion: @ 1 kHz, 100%
Modulation: Mono: 0.1%, Stereo: 0.18%
Capture Ratio: 1.5 dB
Alternate Channel Selectivity: 60 dB
Stereo Separation: 1 kHz: 45 dB, 10 kHz: 35 dB
Signal to Noise Ratio: Mono: 72 dB, Stereo: 68 dB
Dimensions: 17" W x 3" H x 8½" D + 1" knobs, 19" rack mounting accessories included.
Net Weight: 9 lbs.

DH-120 AMPLIFIER

Power Rating: Less than 0.009% total harmonic distortion at any power level up to 62 watts continuous average power per channel into 8 ohms at any frequency between 20 Hz and 20 kHz with both channels driven.

IM Distortion (SMPTE): Less than 0.005% from 1 watt to 62 watts, each channel, into 8 ohms.

Typical THD at 62 watts into 8 ohms: 20 Hz: 0.002%, 1 kHz: 0.002%, 20 kHz: 0.006%

Frequency Response into 8 ohms: -3 dB, 4 Hz to 200 kHz at 1 watt, +0dB, -0.5 dB, 10 Hz to 40 kHz to 62 watts.

Typical Channel Separation: 20 Hz: >75 dB, 1 kHz: >85 dB, 20 kHz: >65 dB

Signal to Noise Ratio, unweighted: Exceeds 100 dB referred to 62 watts into 8 ohms.

Input Impedance: 22,000 ohms.

Input Sensitivity: 1.1 volts rms for 62 watts into 8 ohms.

Damping Factor: 100 to 1 kHz into 8 ohms; 50 to 10 kHz into 8 ohms.

Rise Time: 10 kHz, 45 volts peak to peak square wave, 10% to 90%: 2 μ s.

Slew Rate: 10 kHz, 45 volts peak to peak square wave: 30 V/ μ s.

Semiconductor Complement: 22 Transistors, 4 Power MOSFETs, 23 Diodes, 8 Zener Diodes, 1 Diode Bridge.

Power Consumption: 62 watts both channels into 8 ohms: 300 VA; Quiescent: 62 VA

Size: 3 1/4" high plus 1/2" feet, 15 3/4" wide, 9" deep.

Net Weight: 18 lbs.

XL-280 AMPLIFIER

Power Rating: Less than 0.05% total harmonic distortion at any power level up to 145 watts continuous average power per channel into 8 ohms at any frequency between 20 Hz and 20 kHz with both channels driven.

Continuous Power Output: Into 4 ohms, below 0.1% THD, 20-20 kHz, per channel: 200 watts; Into 8 ohms, below 0.1% THD, 20-20 kHz, mono mode: 400 watts

Continuous Power at Clipping: * Into 8 ohms, per channel: 180 watts; Into 8 ohms, mono mode: 560 watts; Into 4 ohms, per channel: 280 watts; Into 2 ohms, per channel: 360 watts; Into 1 ohm, per channel: 325 watts.

IM Distortion (SMPTE): Less than 0.04% from 1 watt to 145 watts into 8 ohms.

Typical THD at 145 watts into 8 ohms: 1 kHz—0.007%; 10 kHz—0.02%; 20 kHz—0.04%.

Frequency Response @ 1 watt into 8 ohms:

± 0.1 dB, 10 Hz to 50 kHz; ± 3 dB, 0.1 Hz to 500 kHz.

Power Bandwidth: greater than 100 kHz

Phase Shift from 20 Hz to 20 kHz: less than 15 minutes ($1/4$ of one degree)

Typical Channel Separation: 20 Hz—70 dB; 1 kHz—80 dB; 20 kHz—70 dB

Signal to Noise Ratio, unweighted: More than 100 dB @ 145 watts into 8 ohms

Input Impedance: 47,000 ohms

Input Sensitivity: 1.6 volts rms for 145 watts into 8 ohms

Damping Factor: 300 to 1 kHz into 8 ohms; 250 to 10 kHz into 8 ohms; 180 to 20 kHz into 8 ohms

Slew Rate: 10 kHz, 60 volts peak to peak square wave: 75 V/ μ s

Rise Time: 10 kHz, 60 volts peak to peak square wave, 10% to 90%: 0.7 μ s

Semiconductor Complement: 30 transistors, 12 power MOSFETs, 8 diodes, 4 zener diodes, 2 diode bridges

Power Consumption: Quiescent: 150 VA, Maximum: 1200 VA; @ 145 watts into 8 ohms: 540 VA; @ 200 watts into 4 ohms: 840 VA

Size: 5 1/8" high, 17" wide, 10 1/2" deep.

Net Weight: 27 lbs.

* Continuous duty cycle across the audio band. Depending on impedance, time may be thermally limited to several minutes.

DH-500 AMPLIFIER

Power Rating: Less than 0.025% total harmonic distortion at any power level up to 255 watts continuous average power per channel into 8 ohms at any frequency between 20 Hz and 20 kHz with both channels driven.

IM Distortion (SMPTE): Less than 0.007% from 1 watt to 255 watts into 8 ohms.

Typical THD at 255 watts into 8 ohms: 1 kHz—0.0015%; 10 kHz—0.006%

Frequency Response into 8 ohms: -3 dB, 2 Hz to 150 kHz at 1 watt, -0.5 dB, 5 Hz to 50 kHz at 255 watts

Typical Channel Separation at 1 kHz: 100 dB

Signal to Noise Ratio: Exceeds 100 dB referred to 255 watts into 8 ohms, unweighted. Exceeds 90 dB referred to 1 watt into 8 ohms, A weighting

Input Impedance: 47,000 ohms

Input Sensitivity: 2.25 volts for 255 watts into 8 ohms; 0.14 volts for 1 watt

Damping Factor: 350 to 1 kHz into 8 ohms; 70 to 10 kHz into 8 ohms

Rise Time: 10 kHz, 80 volts p/p square wave, 10% to 90%: 2.3 μ s

Slew Rate: 1 kHz, 120 volts p/p square wave, 40 V/ μ s

Semiconductor Complement: 27 transistors, 12 power MOSFETs, 32 diodes, 6 zener diodes, one integrated circuit

Power Consumption: 230 VA quiescent; 1150 VA @ rated power into 8 ohms, both channels

Size: 7 1/4" high, 19" wide, 13" deep including handles

Net Weight: 45 lbs.





HAFLER

A DIVISION OF

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